

We claim:

1. A process for preparing a macrocellular acoustic foam from a polymeric resin composition, said process comprising subjecting a foamable gel comprising at least one blowing agent and at least one polymeric resin composition to an extrusion process, wherein said polymeric resin composition comprises

- A) one or more homopolymers of ethylene, one or more C_3 - C_{20} α -olefin polymer, or a combination thereof;
- B) one or more halogenated flame retardants;
- C) optionally, one or more polymers other than that of Component A; and
- D) optionally, one or more flame retardant synergists,

wherein the extrusion process is conducted at a die pressure greater than the prefoaming critical die pressure but less than or equal to four times that of said prefoaming critical die pressure.

2. The process of Claim 1; wherein

- A) Component A is one or more homopolymers of ethylene, or one or more C_3 - C_{10} α -olefin polymers, or a combination thereof;
- B) said halogenated flame retardant, Component B comprises one or more of hexahalodiphenyl ethers, octahalodiphenyl ethers, decahalodiphenyl ethers, decahalobiphenyl ethanes, 1,2-bis(trihalophenoxy) ethanes, 1,2-bis(pentahalophenoxy) ethanes, hexahalocyclododecane, a tetrahalobisphenol-A, ethylene(N, N')-bis-tetrahalophthalimides, tetrabromobisphenol A bis (2,3-dibromopropyl ether) tetrahalophthalic anhydrides, hexahalobenzenes, halogenated indanes, halogenated phosphate esters, halogenated paraffins, halogenated polystyrenes, polymers of halogenated bisphenol-A and epichlorohydrin, or a combination thereof;

- C) Component C when present comprises one or more of; a substantially random interpolymers, a heterogeneous ethylene/ α -olefin interpolymers, a homogeneous ethylene/ α -olefin interpolymers, a thermoplastic olefin, a styrenic block copolymer, a styrenic homopolymer or copolymer, an elastomer, a thermoplastic polymer, a thermoset polymer; a vinyl or vinylidene halide homopolymer or copolymer, an engineering thermoplastic, or a combination thereof; and
- D) Component D when present comprises one or more metal oxides, boron compounds, and organic peroxides, or a combination thereof.

3. The process of Claim 1; wherein

- A) Component A is one or more homopolymers of ethylene, or one or more propylene polymers, or a combination thereof;
- B) said halogenated flame retardant, Component B, comprises hexabromocyclododecane (HBCD), tetrabromobisphenol A bis (2,3-dibromopropyl ether), PETM-68, or a combination thereof;
- C) Component C when present comprises one or more of; a substantially random interpolymers, a heterogeneous ethylene/ α -olefin interpolymers, a homogeneous ethylene/ α -olefin interpolymers, or a combination thereof; and
- D) said flame retardant synergist, Component D when present, comprises one or more of; iron oxide, tin oxide, zinc oxide, aluminum trioxide, alumina, antimony trioxide, antimony pentoxide, bismuth oxide, molybdenum trioxide, tungsten trioxide, zinc borate, antimony silicates, zinc stannate, zinc hydroxystannate, ferrocene, dicumyl peroxide, and polycumyl peroxide, or a combination thereof.

4. The process of Claim 3; wherein

- A) Component A is LDPE, polypropylene, or a combination thereof;

- B) Component B is hexabromocyclododecane (HBCD), tetrabromobisphenol A bis (2,3-dibromopropyl ether), PETM-68, or a combination thereof;
 - C) Component C when present is a substantially random ethylene/styrene interpolymer, a substantially linear ethylene/1-octene copolymer; or a combination thereof; and
 - D) Component D when present is antimony trioxide.
5. The process of claim 1 in which the die pressure is less than or equal to three times that of said prefoaming critical die pressure.
6. The process of claim 3 in which the die pressure is less than or equal to three times that of said prefoaming critical die pressure.
7. The process of claim 1 in which the die pressure is less than or equal to two times that of said prefoaming critical die pressure.
8. The process of claim 4 in which the die pressure is less than or equal to two times that of said prefoaming critical die pressure.
9. A macrocellular acoustic foam comprising;
- E) one or more homopolymers of ethylene, one or more C₃-C₂₀ α -olefin polymers, or a combination thereof;
 - F) one or more halogenated flame retardants;
 - G) optionally, one or more polymers other than that of Component A; and
 - H) optionally, one or more flame retardant synergists.

10. The macrocellular acoustic foam of Claim 9; wherein

- A) Component A is one or more homopolymers of ethylene, or one or more C₃-C₁₀ α -olefin polymers, or a combination thereof;
- B) said halogenated flame retardant, Component B comprises one or more of hexahalodiphenyl ethers, octahalodiphenyl ethers, decahalodiphenyl ethers, decahalobiphenyl ethanes, 1,2-bis(trihalophenoxy) ethanes, 1,2-bis(pentahalophenoxy) ethanes, hexahalocyclododecane, a tetrahalobisphenol-A, ethylene(N, N')-bis-tetrahalophthalimides, tetrabromobisphenol A bis (2,3-dibromopropyl ether), tetrahalophthalic anhydrides, hexahalobenzenes, halogenated indanes, halogenated phosphate esters, halogenated paraffins, halogenated polystyrenes, polymers of halogenated bisphenol-A and epichlorohydrin, or a combination thereof;
- C) Component C when present comprises one or more of; a substantially random interpolymer, a heterogeneous ethylene/ α -olefin interpolymer, a homogeneous ethylene/ α -olefin interpolymer, a thermoplastic olefin, a styrenic block copolymer, a styrenic homopolymer or copolymer, an elastomer, a thermoplastic polymer, a thermoset polymer; a vinyl or vinylidene halide homopolymer or copolymer, an engineering thermoplastics, or a combination thereof; and
- D) Component D when present comprises one or more metal oxides, boron compounds, and organic peroxide compounds, or a combination thereof.

11. The macrocellular acoustic foam of Claim 9; wherein

- A) Component A is a homopolymer of ethylene, or a propylene polymer, or a combination thereof;
- B) said halogenated flame retardant, Component B comprises hexabromocyclododecane (HBCD), tetrabromobisphenol A bis (2,3-dibromopropyl ether), PETM-68, or a combination thereof;

- C) Component C when present comprises a substantially random interpolmer, a heterogeneous ethylene/ α -olefin interpolmer, a homogeneous ethylene/ α -olefin interpolmer, or a combination thereof; and
- D) said flame retardant synergist, Component D when present, comprises one or more iron oxide, tin oxide, zinc oxide, aluminum trioxide, alumina, antimony trioxide, antimony pentoxide, bismuth oxide, molybdenum trioxide, and tungsten trioxide, zinc borate, antimony silicates, zinc stannate, zinc hydroxystannate, ferrocene, dicumyl peroxide, and polycumyl peroxide, or a combination thereof.

12. The macrocellular acoustic foam of Claim 11; wherein

- A) Component A is LDPE or polypropylene, or a combination thereof;
- B) Component B is hexabromocyclododecane (HBCD), tetrabromobisphenol A bis (2,3-dibromopropyl ether), PETM-68, or a combination thereof;
- C) Component C when present is a substantially random ethylene/styrene interpolmer, a substantially linear ethylene/1-octene copolymer; or a combination thereof; and
- D) Component D when present is antimony trioxide.

13. A macrocellular acoustic foam obtainable by the process according to claim 1.

14. The macrocellular acoustic foam of claim 1 having an average cell size according to ASTM D3576 in the range from 3 mm to 10 mm.

15. The macrocellular acoustic foam of Claim 1 in the form of an office partition, automotive decoupler, domestic appliance sound insulation, sound proofing panel or

machine enclosure.